

Having described the invention, the following is claimed:

1. A chemical concentration measuring system for determining a concentration of hydrogen peroxide in a fluid comprised of at least one chemical component, comprising:

a capacitive voltage divider circuit including:

(a) a first capacitor having first and second conductors exposed to the fluid, said fluid comprising a dielectric therebetween, and

(b) a second capacitor;

an alternating current (AC) voltage generator for applying an AC voltage to the capacitive voltage divider circuit; and

processing means for measuring a voltage across the second capacitor to determine a first capacitance of the first capacitor, and determining the concentration of the hydrogen peroxide in the fluid in accordance with the first capacitance.

2. A chemical concentration measuring system according to claim 1, wherein said first capacitor is selected from the group consisting of: a parallel plate capacitor, a cylindrical capacitor, and a spherical capacitor.

3. A chemical concentration measuring system according to claim 2, wherein said first capacitor is a parallel plate capacitor, said first and second conductors being metal net plates.

4. A chemical concentration measuring system according to claim 1, wherein said processing means includes a memory for storing a table of data including capacitance values and corresponding concentration values indicative of the relative concentration of hydrogen peroxide in the fluid.

5. A chemical concentration measuring system according to claim 4, wherein said processing means obtains a relative concentration from said table in accordance with said first capacitance.

6. A chemical concentration measuring system according to claim 4, wherein said processing means interpolates or extrapolates a relative concentration corresponding to the first capacitance using said table of data.

7. A chemical concentration measuring system according to claim 4, wherein said processing means normalizes said relative concentration to provide an absolute concentration of the hydrogen peroxide in the fluid.

8. A chemical concentration measuring system according to claim 1, wherein said fluid is a liquid solution.

9. A chemical concentration measuring system according to claim 8, wherein said liquid solution includes at least one of: liquid hydrogen peroxide and water.

10. A chemical concentration measuring system according to claim 1, wherein said fluid is a gas.

11. A chemical concentration measuring system according to claim 10, wherein said gas includes at least one of: vaporized hydrogen peroxide, water vapor, air and ozone.

12. A chemical concentration measuring system for determining a concentration of hydrogen peroxide in a fluid comprised of at least one chemical component, comprising:

a resistive voltage divider circuit including:

(a) a first resistor including first and second conductors exposed to the fluid, said fluid comprising a resistive element of the first resistor, and

(b) a second resistor;

an alternating current (AC) voltage generator for applying an AC voltage to the resistive voltage divider circuit; and

processing means for measuring a voltage across the second resistor to determine a first resistance of the first resistor, and determining the concentration of the hydrogen peroxide in the fluid in accordance with the first resistor.

13. A chemical concentration measuring system according to claim 1, wherein said processing means includes a memory for storing a table of data including resistance values and corresponding concentration values indicative of the relative concentration of hydrogen peroxide in the fluid.

14. A chemical concentration measuring system according to claim 13, wherein said processing means obtains a relative concentration from said table in accordance with said first resistance.

15. A chemical concentration measuring system according to claim 13, wherein said processing means interpolates or extrapolates a relative concentration corresponding to the first resistance using said table of data.

16. A chemical concentration measuring system according to claim 13, wherein said processing means normalizes said relative concentration to provide an absolute concentration of the hydrogen peroxide in the fluid.

17. A chemical concentration measuring system according to claim 12, wherein said fluid is a liquid solution.

18. A chemical concentration measuring system according to claim 17, wherein said liquid solution includes at least one of: liquid hydrogen peroxide and water.

19. A chemical concentration measuring system according to claim 12, wherein said fluid is a gas.

20. A chemical concentration measuring system according to claim 19, wherein said gas includes at least one of: vaporized hydrogen peroxide, water vapor, air and ozone.

21. A method for determining a concentration of hydrogen peroxide in a fluid having at least one chemical component, comprising:

exposing a capacitor having first and second conductors to the fluid, said fluid comprising a dielectric therebetween; and

determining a change in an electrical property of the capacitor associated with the capacitor, said change in the electrical property varying according to the concentration of the hydrogen peroxide in the fluid.

22. A method according to claim 21, wherein said step of determining a change in an electrical property of the capacitor includes:

accessing a table of data including capacitance values and corresponding concentration values indicative of the relative concentration of the hydrogen peroxide in the fluid.

23. A method according to claim 21, wherein said step of determining a change in an electrical property of the capacitor includes:

interpolating or extrapolating from the table of data a relative concentration of the hydrogen peroxide in the fluid, corresponding to the change in the electrical property of the capacitor.

24. A method according to claim 21, wherein said processing means normalizes said relative concentration to provide an absolute concentration of the hydrogen peroxide in the fluid.

25. A method according to claim 21, wherein said fluid is a liquid solution.

26. A method according to claim 25, wherein said liquid solution includes at least one of: liquid hydrogen peroxide and water.

27. A method according to claim 21, wherein said fluid is a gas.

28. A method according to claim 26, wherein said gas includes at least one of: vaporized hydrogen peroxide, water vapor, air and ozone.

29. A method for determining a concentration of hydrogen peroxide in a fluid having at least one chemical component, comprising:

exposing a resistor having first and second terminal to the fluid, said fluid comprising a resistive element of the resistor; and

determining a change in an electrical property of the resistor, said change in the electrical property varying according to the concentration of the hydrogen peroxide in the fluid.

30. A method according to claim 29, wherein said step of determining the change in the electrical property of the resistor includes:

accessing a table of data including resistance values and corresponding concentration values indicative of the relative concentration of the hydrogen peroxide in the fluid.

31. A method according to claim 29, wherein said step of determining the capacitance includes:

interpolating or extrapolating from the table of data a relative concentration of the hydrogen peroxide in the fluid, corresponding to the change in the electrical property of the resistor.

32. A method according to claim 29, wherein said processing means normalizes said relative concentration to provide an absolute concentration of the hydrogen peroxide in the fluid.

33. A method according to claim 29, wherein said fluid is a liquid solution.

34. A method according to claim 33, wherein said liquid solution includes at least one of: liquid hydrogen peroxide and water.

35. A method according to claim 29, wherein said fluid is a gas.

36. A method according to claim 35, wherein said gas includes at least one of: vaporized hydrogen peroxide, water vapor, air and ozone.